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THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	
Fermin Marquez ARZATE et al.	
Serial No. 10/780,021	Group Art Unit: 2831
Filed: February 16, 2004	Examiner: William Mayo II
Title: **IMPROVED OVERHEAD AND UNDERGROUND TELEPHONE LEAD IN CABLE FOR VOICE, DATA AND VIDEO TRANSMISSION SERVICES**	**APPELLANTS' REPLY BRIEF UNDER 37 C.F.R. §41.41**
Docket No. MX/JFC04-01A	

Assistant Commissioner for Patents
Washington D.C. 20231

Sir:

The following is Appellants' Reply Brief pursuant to 37 C.F.R. §41.41 in response to Examiner's Answer.

1. **The rejection of the claims under 35 U.S.C. §103(a) should be withdrawn because the cited art does not suggest or motivate one of ordinary skill in the art to arrive at the claimed invention**

The Examiner maintained the rejection of Claims 33-56 under 35 U.S.C. §103(a) as being unpatentable over Osornio et al. (US 2002/0003047; US Patent 6,509,526) in view of Asai et al. (U.S. Patent 6,103,317).

Appellants submit that Osornio et al. (discussed in the Appellants' application,

page 3, line 3) has a common assignee as the Appellants' present application. Osornio et al. discloses as follows:

a telephone lead in cable comprising:

a) transmission circuit comprising two metal wires, helically twisted about another;

b) a thermoplastic compound layer coating each of the helically twisted said metal;

c) a fusion protection thin band made of heat resistant material.

On page 8, first full paragraph of the Examiner's answer, the Examiner admitted that Osornio et al. did not disclose: 1) a swelling layer, 2) filler and 3) protective thermoplastic element. The Examiner looked to other prior art for these three elements present in the patent application but were missing in Osornio et al. The Examiner found Asai et al. which provide a method for the production of water-blocking composite comprising a substrate impregnated with or having a coating of a mixture of a radiation-polymerised compound and a water-swellable compound. Asai et al. provide a broad disclosure of the swelling layer, polysodium acrylate homopolymer, filler and protective thermoplastic element.

However, upon reading Asai et al., one of ordinary skill in the art is confronted with various polymers, polymer components, curing compositions in the preparation of radiation curable polymers. Asai et al. disclose a BROAD range of useful acrylate monomers or oligomers and includes aliphatic and cycloaliphatic acrylates, aromatic hydrocarbon acrylates, heterocyclic acrylates, epoxy acrylates, polyether acrylates, polyester acrylates, urethane acrylates, silicone acrylates, metallic acrylates, melamine acrylates, amino acrylates and other functional acrylates. Other radiation polymerisable materials such as N-vinyl pyrrolidone or N-vinyl acetamide or acrylamides may also be used.

Moreover, Asai et al. disclose the following list of polymers at col. 5, lines 1-65:

1. mono or multi-functional acrylates having mono- or multi-carboxylic acid or sulphonic acid functionality e.g., acrylic acid, β-carboxy ethyl acrylate (β-CEA), maleic or fumaric acid (or anhydrides), acrylamidosulphonic acid.

2. salts of the acid functional acrylates with sodium, potassium or ammonium as the counter-ion e.g. sodium acrylate, ammonium acrylate, sodium salt of acrylamido sulphonic acid, sodium 2-sulphoethoxy acrylate. Also salts of these acids with other amines such as triethylamine, methyl morpholine, hydroxyethyldiethylamine, triethanolamine, hydroxyethyl morpholine.
3. mono or multi functional acrylate having mono or multi hydroxy functional group(s) eg. hydroxy ethyl acrylate, hydroxy propyl acrylate; glycerol mono and multi acrylates; trimethylolpropane mono and multi-acrylates, acrylated epoxides, e.g., Ebecryl III;
4. mono or multi functional acrylamides eg N-hydroxymethylacrylamide, N- alkyl or N-alkoxy substituted acrylamides;

5. mono or multi acrylate having alkoxylated chains eg ethoxy or poly ethylene oxide structure e.g. polyethylene glycol diacrylate (eg SR 344 from Sartomer), polypropylene glycol diacrylate, ethoxy ethoxyethyl acrylate (EOEOEA), polypropylene oxide monoacrylate (SR 607 from Sartomer), ethoxylated phenoxy ethyl acrylate, monomethoxy neopentyl glycol propoxylate monoacrylate (Photomer 8127 from Henkel);

6. amino-acrylate or amine-acrylate salt, eg N,N-dimethylaminoethyl acrylate (DMAEA); hydrochloride or toluene sulphonate or other salt of DMAEA;

7. metal acrylate e.g. sodium acrylate or zinc diacrylate;

8. acryloxy sulphonate salt e.g. sodium 2-sulphoethoxy acrylate;

9. other monomer and oligomer which are hydrophilic or water soluble e.g. N-vinyl 2-pyrrolidone, N-vinyl caprolactam, vinyl acetate, tetrahydrofuryl acrylate, acryloxy silane coupling agent, hydrophilic urethane acrylate, polyether acrylate, epoxy acrylate and polyester acrylate.

10. One or more photoinitiators and/or photosensitisers are preferably selected from the groups below, depending on the type of polymerisation.

11. For free radical reaction of acrylate by UV radiation or visible light radiation examples include:

a) acetophenone type e.g. 2-hydroxy-2-methyl-1-phenyl-propan-1-one (Darocure 1173)

b) acylphosphine oxide e.g. Irgacure 1800)

c) benzophenone type

d) benzoin type e.g. benzil dimethyl ketal (Irgacure 651)

e) thioxanthone type e.g. isopropylthioxanthone (ITX)

f) other sensitiser and co-initiator for UV and visible light curing e.g. triethanolamine other amine-alcohols, Michler's Ketone, eosin.

12. For the cationic photoinitiation of vinyl ether or epoxy system example photoinitiators are aryl diazonium salts or aryl sulphonium salt eg UVI- 6974 and aryl metal complexes such as Ciba CG24-061.

13. A photoinitiator is not necessary for Electron Beam radiation curing of radical systems.

14. The water swellable compound may be inorganic (e.g. certain bentonites) or it may be a superabsorbent polymer. A superabsorbent polymer is preferred.

15. The superabsorbent polymer, which may be a powder or fibre or other form, is preferably selected from groups such as:

a) crosslinked polyacrylates including polyacrylic acids and their fully or partially neutralised derivatives such as cross-linked sodium polyacrylate; copolymers or terpolymers of acrylic acid and/or its salts such as sodium acrylate with acrylamide and/or other carboxy acid or sulphonic acid or hydroxy- or amino-functional monomers;

b) cross-linked polyethylene oxide based polymers;

c) cellulosic polymers and graft polymers based on cellulosic polymers such as cross-linked sodium carboxy-methyl cellulose; sodium acrylate grafted starch;

d) co- and ter- polymers based on acrylamides and/or acrylonitriles;

e) polyvinyl alcohols and related copolymers;

f) poly vinyl ethers and related co- and ter- polymers;

g) polymaleic anhydride and copolymers of maleic anhydride;

h) other type of commercial superabsorbent polymer.

16. Preferred compositions comprise:

a) 20 to about.98% wt. of the first component (radiation polymerisable monomer/oligomer or mixture of such mono- and multi-functional monomers and oligomers);

b) 0.1.about.10.0% wt. of the second component (photoinitiator);

c) about.80% wt. of the third component (superabsorbent polymer).

17. The swelling response of the cured coating in water can be accelerated by incorporation of surfactants, blowing agents and/or other added polymers or fillers or fibres or other additives.

18. Addition of surfactant up to 50%, preferably 2 to 50% of the total composition weight (more preferably 2 to 50% of the radiation curable components) can be particularly advantageous in some systems and can significantly increase the swell response. Example of surfactants which can be used with or without water can be non-ionic, e.g., alkoxylated amines, alcohols, esters, oils, fatty acids, nonylphenol and ethanolamides and sorbitan esters, alkyl aryl polyether alcohols e.g., Triton X100 (from Rohm & Haas), or anionic or cationic, or amphoteric. Surfactants can help to stabilise some systems also containing other dispersed materials e.g., fillers, salt or base. The effectiveness of the added surfactant can be enhanced by pre-mixing with the filler, salt or superabsorbent.

19. Addition of blowing agent that can generate gas when contacted with water or on heating (e.g., during exposure to UV lamp which usually imparts some heating effect and also produces some consequential heat of polymerisation) can also increase the swell response.

20. Examples are sodium bicarbonate, sodium carbonate, ammonium carbonate, ammonium bicarbonate with or without organic or inorganic acid (eg acetic acid, citric acid, oxalic acid, tartaric acid or keto-acid, or hydroxy acids such as lactic acid, etc), or $NaAl(SO_4)_2$, $KAl(O_4)_2$, NaH_2PO_4 or $NaBH_4$; or C_6N_6, BaN_6, azo compounds such as azodicarbonamide etc. It will be seen that some of those blowing agents such as carbonates, hydrogen carbonates and some phosphate derivatives may usefully act both as blowing agent and base in certain formulations. Here, the avoidance of excessive heat build up at the mixing stage

(e.g., gradual addition) is required to avoid premature activation of the blowing agent effect in such systems.

21. To improve the coatability on a substrate, resins, polymers and fillers may be added.

22. Addition of adhesion promoter or tackifying resin can help the coating to adhere stronger to certain substrates.

23. Use of di- or multi- functional acrylate helps the coating to cure faster.

24. Use of longer chain flexible acrylate helps the coating to become flexible.

Appellants submit that of the above list of polymers, the Examiner's assertion that it would be obvious to one of ordinary skill in the art to **"pick and choose"** polysodium acrylate homopolymer from a long list of disclosed polymer is erroneous.

Moreover, the Examiner's asserted that it would be obvious to "pick and choose" a filler material from several polymers in Asai et al. to provide the cable of the present invention. Furthermore, the Examiner asserted that it would be obvious to "pick and choose" a protective thermoplastic element and arrive at the presently claimed invention.

This would have required one of ordinary skill in the art to randomly or arbitrarily "pick and choose" among a number of different polymers, a plurality of ingredients such as blowing agents, fillers, photoinitiators, surfactants, a range of radiation polymerization conditions and characteristics. *In re Arkley*, 172 USPQ 524 (CCPA 1972).

Moreover, the Examples (Tables 1-3) did not provide any information or guidance which polymer or group of polymer components, one of ordinary skill in the art would "pick and choose" from a list of polymers. The Tables provide viscosity and water swell test for different polymers and compositions. None of the polymers listed in Tables 1-3 provides the use of polysodium acrylate homopolymer, nor the filler nor protective thermoplastic element as an example in Asai et al.

It is submitted that the Examiner's rejection falls short of what is necessary for an obviousness rejection. It has been found that a broad disclosure failed to constitute a description of a specific claimed compound. It has been subsequently stated that without specific direction, a general disclosure will not be sufficient to support an obviousness rejection. *In re Ahlbrecht*, 168 USPQ 293 (CCPA 1971)

One of ordinary skill in the art, wouldn't randomly or arbitrarily pick a specific

swelling layer employed by the present invention and accomplish the necessary results achieved by the Appellants.

Thus, the Examiner used Asai et al."as a template to **pick** and **choose"** among several infinite variety of polymers to demonstrate obviousness of the claims. By "picking and choosing", one can thus find all the limitations, but the specification provides no direction, let alone "full, clear, concise and exact" direction required to the claimed combination. The same "picking and choosing" is required in order to arrive at all the claimed combinations. When one has to "pick and choose" among a wide variety of polymers, fillers, blowing agents, oxidizing agents, the subject matter of the claimed invention has not been described as required by the statute. Possession of the subject matter at the time of the invention has not been demonstrated. One of ordinary skill in the art would have to "pick and choose" through Asai et al.'s specification in order to find the "claimed limitation."

It is impermissible to **"pick and choose"** from any one of the reference only so much of it as will support a given position to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. *In re Wesslau*, 147 USPQ 391 (CCPA 1965).

A patent may not be obtained...if the differences between the [claimed invention] and the prior art are such that the subject matter as a whole would have been obvious *at the time the invention* was made to a person of ordinary skill in the art 35 USC §103 (a). An analysis of the patentability of the invention begins "at the time the invention was made". Here, the date of the invention is presumed to be the filing date of the parent application, February 16, 2004. The filing date of Osornio et al. is March 19, 2001 and the filing date of Asai et al. is November 28, 1996.

Measuring a claimed invention against the standard established by §103 requires the oft-difficult but critical step of casting the mind back to the time of the invention to consider the thinking of one of ordinary skill in the art guided only by prior art references and then accepted wisdom in the field. We can not use hindsight reconstruction to "**pick** and **choose"** among isolated disclosures in the prior art to deprecate the claimed invention. *In re Fine*, 5 USPQ 2d 1780 (Fed. Cir. 1988).

The Examiner's reliance on *In re Susi*, 169 USPQ 423 (CCPA 1971) or *In re*

Lemin, 141 USPQ 814 (CCPA 1964) is misplaced. *Susi* employed two prior art. The Court held that a combination, for same purpose, of one additive explicitly disclosed in one prior art and another suggested by prior art is at least prima facie obvious. In the present application, Asai et al. is the only prior art cited by the Examiner which discloses polyacrylate. There is no disclosure or suggestion in Asai et al. regarding the specific utility of sodium polyacrylate as claimed in the present invention. Moreover, sodium polyacrylate in Asai et al. was not shown in the examples to be an exceptional polymer such that Examiner can "pick and choose" among a list of polymers or combinations thereof would be obvious.

Lemin filed a declaration and showed that when the total number of carbon atoms in the ester and alkoxy substituents is within the range of 5 to 12, the compounds involved will have selective and potent herbicidal action. There was no declaration filed by the Appellants with respect to present application.

It is submitted that there is **no disclosure or suggestion** in Osornio et al. regarding the following embodiments as claimed in the present invention:

1. swelling powder material (moisture protection element) broadly or specifically the use of polysodium acrylate homopolymer (Claims 33; 38; 56);
2. filler; the filler is deposited electrostatically and arranged between the area around the thin sleeve and core of stranded conductors (Claim 48; 56);
3. protective tape material; (Claims 52-53; 56);
4. the deposition of swelling material by electrostatic process (Claim 33; 39);
5. the specific impregnation of the swelling material between the protective material and the stranded conductor (Claim 53);
6. cable construction from at least 16 AWG TO 26 AWG (Claim 54); and
7. trimmed edges and recesses to permit installation of product (Claim 55).

Appellants submit that as disclosed in page 2, paragraph 0015, Osornio et al. **did not require** a swelling material. "Cover **16** *provides the protection* against mechanical abuse to which the elements are submitted during warehousing, transportation and installation. The cover compound is weatherproof and protects the circuit against premature aging caused by solar action, water or any external agents." Thus, disclosure from Osornio provides **no intention** for additional protection to be weather resistant. The

weather resistant objective of Osornio et al. has been **satisfied** by cover 16. Nothing in Osornio et al. discloses or suggests the presently claimed invention regarding the use of a swellable polymer. If anything, Osornio **teaches away** from the claimed invention.

The present invention **required** the swelling agent and cover 16 to provide additional advantages against moisture for underground and overhead cable. The cable provides high speed digital signal transmission *without* interference from voice service signals and use of additional electronic circuits to separate signals.

Design is a critical element of the present invention. The Appellants have developed an improved VVDL-type lead-in cable for overhead or underground installation, based on a design of self-supporting elements for overhead lead-in lines and a dedicated circuit permitting a high-speed digital signal transmission without interfering at all with the voice service signals or the use of additional electronic circuits to separate the signals. The design demonstrates that it is highly resistant to diaphony, wherein it has a core of two insulated conductors impregnated with a surrounding layer of moisture absorbing swelling powder. The use of swelling powder on the paired core permits the direct use of the cable in underground installations because the absorbing material prevents the penetration of the moisture usually found in underground installation areas

From the above, the Examiner has <u>not</u> shown the motivation to "choose/select" a) polysodium acrylate hompolylmer; b) filler; c) protective thermoplastic element, from a multitude of polymers, combination of multitude of polymers, and ingredients such as blowing agents, UV agents, tackifying resins, fillers, surfactants, organic/inorganic acids, adhesion promoters, photoinitiators, etc. disclosed in Asai et al.

Further, the ability of one of ordinary skill in the art to prepare a swellable polymer *does not* lead the artisan to achieve the presently claimed cable because there are several factors to be considered, e.g., bandwidth and resistance to radio interferences, cable weight, high speed transmission above 155 Mbps, response to frequencies above 100 Mhz and self supporting over distances spanning more than 100 meters. It is submitted that the specified claimed modifications *must be specifically* motivated or suggested by the prior art.

Moreover, the claims at issue recite specific combinations of characteristics which were not addressed by the Examiner. Rather, the Examiner attempted a "broad

conclusory statements " regarding the teaching of Asai et al. and Osornio et al. **Broad conclusory statements, standing alone are not evidence**, *In re Dembiczek*, 50 USPQ 2d 1614 (Fed. Cir. 1999) at 1617.

For example, the manner of layering/coating the parts of the cable were not disclosed or suggested in Asai et al.

Claim 39 recites an overhead or underground telephone lead in cable for transmission services (VVDL) wherein the swelling layer is electrostatically applied to form a cover layer on the stranded pair during the extrusion of a flame resistant reinforced thermoplastic cover.

Claim 46 recites the insulation is applied continuously and uniformly such that the concentricity of the wall of insulating material with regard to the conductor is higher than 90% and can be colored for identification purposes.

Claim 48 recites the swelling layer further comprises a filler, which serves as a moisture protective element and is deposited electrostatically and arranged between the area around the thin sleeve and the core of the stranded conductors.

Claim 53 recites the space between the thin protective coating tape material and the stranded conductor is impregnated through electrostatic means with the swelling layer.

Claim 54 recites development of cable construction from at least 16 AWG to 26 AWG conductors as components of the core.

Claim 55 recites trimming edges and recesses to permit installation of the product.

Claim 56 recites the cable having a thin thermoplastic sleeve as protecting element against melting heat of up to 240°C and the filler of the swelling layer surrounding the core is deposited electrostatically between the area around the thin sleeve and core of stranded conductors as a moisture protection element.

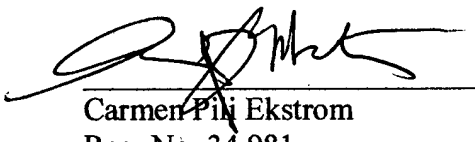
Finally, there was no disclosure or suggestion regarding electrostatic deposition in Osornio et al or Asai et al. It is submitted that the filler and swelling layer were deposited electrostatically to permit the uniform distribution of the swelling material film in a controlled manner, and deposit the swelling material in a quantity that is proportional to the required thickness of the said film.

As discussed above and disclosed in the present application, the cable design is

critical in the present application. Even though cables presenting stranded pairs of conductors are known, not all of them have the same application, i.e. depending on their use, the design varies in each case and even the number of pitches of the stranded pair presents differences. The design of self-supporting elements for overhead lead-in lines and a dedicated circuit permitting a high-speed digital signal transmission without interfering at all with the voice service signals or the use of additional electronic circuits to separate the signals, is important. The design is highly resistant to diaphony, because it has a core of two insulated conductors impregnated with a surrounding layer of moisture absorbing swelling powder which was deposited electrostatically.

From the above, Appellants submit that the Examiner has not presented sufficient argument or reasoning to establish a prima facie case of obviousness. Appellants request the reversal of Examiner's action in rejection claims 33-56 and allowance thereof are respectfully requested.

Respectfully submitted,



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